BINARY CODED DECIMAL ADDITION

ABSTRACT

The binary coded decimal (BCD) adder circuit adds two BCD encoded operands, with an input carry bit, and produces a BCD encoded sum. The adder has three stages. The first stage receives two BCD encoded operands as inputs, groups the inputs into contiguous blocks of 4-bits each, computes an intermediate sum vector and carry vector without considering the input carry bit, and also computes propagation and generate functions for each 4-bit group. The second stage is a carry look ahead circuit which computes all carries from the input carry, and the propagate and generate functions of the 4-bit groups from the first stage. The third stage adjusts the intermediate sum vector with pre-correction factors which depend upon the input carry and the carries generated from the second stage and the carry vectors from the first stage.